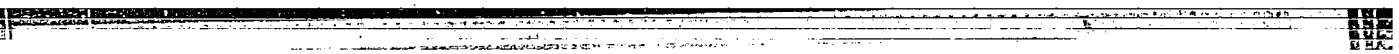
IGLITSKIY, M.A. (Moskva)

Recurrent and similar equations. Mat. pros. no.3:173-176 '58.
(Equations) (MIRA 11:9)

ARSHON, I.S.; IGLITSKIY, M.A.

Decrease of harmonic functions in a cylinder. Dokl. AN SSSR 152 no.4:775-778 O '63. (MIRA 16:11)

1. Predstavleno akademikom M.V. Keldyshem.



of log n = f(t) at the end of observation period. The values of
found in this way were always considerably greater than the con-

IGLITSKIY, Ye.S., inzh.

Certain cases of the faulty operation of DFZ-2 high-frequency differential-phase protection. Elek.sta.33 no.2:93-94 F '62. (MIRA 15:3)

(Electric substations)(Electric protection)

IGLITSKIY, Ye.S., inzh.

Possibility of not installing high-speed line protection.
Elek. sta. 35 no.2:90 F '64. (MIRA 17:6)

VOSTROKNUTOV, N.G., inzhener, IGLITSYN, I.L. , redaktor; LARIONOV, G.Ye., tekhnicheskiy redaktor.

[Circuits for connecting alternating current meters] Skhemy vkliucheniia schetchikov peremennogo toka. Izd. 3-e, perer. Moskva, Gos.energ.izd-vo, 1955. 78 p. (MLRA 8:11)

1. Russia (1923- U.S.S.R) Gosudarstvennaya inspektsiya po promyshlennoy energetike i energonadzoru.
(Electric meters)

ORKINA, B.G., kand.tekhn.nauk; IGLITSYN, I.L., red.; VORONIN, K.P., tekhn.red.

[Determining the safeness of starting and self-starting of the 40PRV-60 x 2 propeller pump equipped with variable-pitch blades] Opredelenie dopustimosti puska i samozapuska tsirkuliatsionnogo nasosa energ. izd-vo. 1957 23 p. (Moscow. TSentral'naia nauchno-issledovatel'skaia elektrotecheskaia laboratoriia. Informatsionnye materialy no. 16). (MIRA 11:7)

(Rotary pumps)

IGLITSYN, I.L., redaktor; MEDVEDEV, L.Ya., tekhnicheskiy redaktor

[Standards for checking parts of steam boilers for strength; obligatory for all ministries and departments] Normy rascheta elementov parovykh kotlov na prochnost'; obiazatel'ny dlia vsekh ministerstv i vedomstv. Moskva, Gos.energ.izd-vo, 1957. 47 p. (MLRA 10:7)

1. Russia (1923- U.S.S.R.) Komitet po nadzoru za bezopasnym vedeniem rabot v promyshlennosti i gornomu nadzoru.
(Boilers)

VASIL'KOV, Ivan Semenovich; GORTINSKIY, S.M., red.; IGLITSYN, I.L., red.; MEDVEDEV, L.Ya., tekhn.red.

[Development of electric power engineering in the U.S.S.R. during the last 40 years] Razvitie elektroenergetiki SSSR za 40 let. Moskva, Gos. energ. izd-vo, 1957. 79 p. (MIRA 11:3)
(Electrification)

BURLAKOV, B.S., inzh.; GEYMAN, D.Ya., inzh.; GRZHIBOVSKIY, V.V., inzh.; GUSEV, Yu.S., inzh.; YEFREMOV, V.Ye., inzh.; ZHURAVSKAYA, G.Ya., inzh.; KAGAN, V.G., inzh.; MALYSHEV, A.I., inzh.; PODREZOV, V.M., inzh.; SAPIRSHTEYN, V.M., inzh.; SHKARIN, Yu.P., inzh.; IGLITSYN, I.L., red.; LARIONOV, G.Ye., tekhn.red.

[Adjustment of high-frequency communication and remote control channels utilizing electric power transmission lines] Naladka vysokochastotnykh kanalov sviazi i telemekhaniki po provodam linii elektroperedachi. Moskva, Gos.energ.izd-vo, 1958. 236 p. (MIRA 13:10)

1. Russia (1923- U.S.S.R.) Ministerstvo elektrostantsii. Tekhnicheskoye upravleniye.

(Remote control) (Telecommunication)

IGLITSYN, I.L., red.; VORONIN, K.P., tekhn.red.

[Rules on industrial consumption of electric power] Pravila pol'zovaniia elektricheskoi energiei promyshlennymi potrebiteliami. Moskva, Gos.energ.izd-vo, 1959. 29 p. (MIRA 13:9)

1. Russia (1923- U.S.S.R.) Gosudarstvennaya inspektsiya po promyshlennoy energetike i energonadzoru.
(Electric power)

KHORUNZHIY, V.A., red.; RIBAS, Yu.M., red.; BORISEVICH, Z.S., red.; VERTYACHIKH, V.G., red.; KOST'YEV, N.K., red.; MOVSESOV, N.S., red.; ZHIGULIN, Yu.V., red.; RAKOVICH, I.I., red.; RUVINSKIY, V.A., red.; TULIN, V.S., red.; FETISOV, P.A., red.; FILIMONOV, P.V., red.; IGLITSYN, I.L., red.; LARIONOV, G.Ye., tekhn.red.

[Rules for the manufacture of explosion-proof electric equipment] Pravila izgotovleniia vzryvozashchishchennogo elektrooborudovaniia. Moskva, Gos.energ.izd-vo, 1960. 54 p. (MIRA 13:11)

1. Russia (1923- U.S.S.R.) Gosudarstvennyy komitet po avtomatizatsii i mashinostroyeniyu.
(Electric apparatus and appliances)

DUTKIN, G.S.; CHUKHOV, S.P.; GRIGOR'YEV, Yu.Ye., red.; IGLITSYN, I.L., red.; BORUNOV, N.I., tekhn.red.

[Equipment and regulations for the erection of 35 to 500 kv. electric power transmission lines] Montazhnye prisposobleniia i ukazaniia po montazhu provodov linii elektroperedachi 35 - 500 kv. Moskva, Gos.energ.izd-vo, 1960. 46 p. (MIRA 14:1)

1. Armset', trust, Moscow.
(Electric lines)

CHILIKIN, M.G., red.; BEL'KIND, L.D., red.; YELIZAROV, P.P., red.; MESHKOV, V.V., red.; NIKITIN, S.P., red.; PEREKALIN, M.A., red.; PRUZNER, S.L., red.; SHNEYBERG, Ya.A., red.; IGLITSYN, I.L., red.; ANTIK, I.V., red.; SKVORTSOV, I.M., tekhn. red.

[Fifty years of the Moscow Order of Lenin Power Engineering Institute] 50 let Moskovskogo ordena Lenina energeticheskogo instituta imeni V.M. Molotova. Moskva, Gos. energ. izd-vo, 1955. 302 p. (MIRA 14:8)
(Power engineering)

IZRAILEV, R.A., inzh.; NIKIFOROV, Ye.P., inzh.; IOLITSYN, I.L., red.; PAVLOVA, T.I., tekhn. red.

[Distance-type device for signaling ice crust formation on overhead power transmission lines.] Distantsionnyi signalizator gololeda na liniiak elektroperedachi Moskva, Gosenergoizdat, 1960. 26 p. (Moscow. Vsesoiuznyi nauchno-issledovatel'skii institut elektroenergetiki. Informatsionnye materialy, no.48) (MIRA 16:8)

LINDORF, L.S., inzh.; IGLITSYN, I.L., red.; LARIONOV, G.Ye., tekhn.red.

[Increasing the operational reliability of synchronous motors.] Povyshenie nadezhnosti raboty sinkhronnykh dvigatelei. Moskva, Gosenergoizdat, 1960. 118 p. (Moscow.Vsesoiuznyi nauchno-issledovatel'skii institut elektroenergetiki. Informatsionnye materialy, no.50). (MIRA 17:2)

BURDENKOV, G.V., inzh.; IGLITSYN, I.L., red.; VORONIN, K.P., tekhn. red.

[TK-1 telemetering device with pulse-code modulation.] Ustroistvo telеizmereniia s imnul'sno-kodovoi moduliatsiei tipa TK-1. Moskva, Gosenergoizdat, 1960. 27 p. (Moscow. Vsesoiuznyi nauchno-issledovatel'skii institut elektroenergetiki. Informatsionnye materialy, no.57) (MIRA 16:8)

SHMAYN, Yu.A., inzh.; Prinimali uchastiye: KHARLAMOV, S.Kh., inzh.; BIRYULEV, V.G., inzh.; TAMANTSEVA, I.S., inzh.; IGLITSYN, I.L., red.; LARIONOV, G.Ye., tekhn.red.

[Study of ignitron characteristics and design of firing circuits] Issledovanie kharakteristik zazhigatelei i raschet skhem zazhiganiia ignitronov. Moskva, Gos.energ.izd-vo, 1960. 57 p. (Moscow. Vsesoiuznyi nauchno-issledovatel'skii institut elektroenergetiki. Informatsionnye materialy, no.56). (MIRA 14:12)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut elektroenergetiki (for Kharlamov, Biryulev, Tamantseva).
(Mercury-arc rectifiers)

ARONOV, L.I., prof.; DONSKOY, A.V., prof., doktor tekhn. nauk; STRUNSKIY, B.M., inzh.; KIREYEV, M.I., inzh.; IGLITSYN, I.L., red.; BORUNOV, N.I., tekhn. red.

[Efficient use of electric power in electric furnaces] Ratsional'noe ispol'zovanie elektroenergii v elektricheskikh pechakh; sbornik statei. [By] L.I.Aronov i dr. Moskva, Gosenergoizdat, 1962. 279 p. (MIRA 15:9)

1. Moskovskiy energeticheskiy institut im. Molotova (for Aronov).
(Electric furnaces) (Electric power)

...ISIN, M. I.

PA 26T83

USSR/Physics
Selenium
Dielectrics - Constants

Dec 1946

"The Dielectric Constant of Amorphous Selenium," M. I. Iglitsyn, 4 pp

"Zhur Tekh Fiz" Vol XVI, No 10

This article discusses the dielectric constant of amorphous selenium and its relation to frequency and temperature. Measurements were conducted with DC and AC. The results of experiments lead to the conclusion that the dielectric constant of amorphous selenium can be defined as an atomic as well as a molecular polarization. Submitted at the Military rn

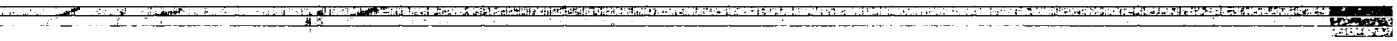
26T83

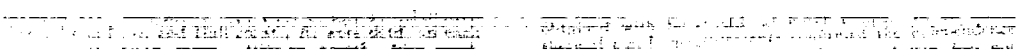
USSR/Physics (Contd) Dec 1946

Electro-Technical Academy of Communications imeni S. M. Budenniy, Chair of Physics.

ID

26T83





IGLITSYN, M. I.
Electronics

Dissertation: "An Investigation of the Electrical Properties of Polycrystalline Selenium." Cand Phys-Math Sci, Tomsk State U, Tomsk, 1953. (Referativnyy Zhurnal Fizika, Moscow, Mar 54)

SO: SUM 213, 20 Sep 1954

57-27-7-3/40

AUTHORS: Iglitsyn, M. I., Kontsevoy, Yu. A., Kudin, V. D., Meyer, A. A.

TITLE: Lifetime Measurements of Charge-Carriers in Semiconductors (Ob izmerenii vremeni zhizni nositeley zaryada v poluprovodnikakh)

PERIODICAL: Zhurnal Tekhnicheskoy Fiziki, 1957, Vol. 27, Nr 7, pp. 1414 - 1424 (USSR)

ABSTRACT: The measuring method is based on the modulation of conductivity in a point-contact. The attempt is made here in investigations of the concentration-variation of the not real (minor ?) charge-carriers to take into account not only the recombination in the volume, but also that on the surface, as well as the diffusion of the charge-carriers. On this basis the calculation-formulae are derived under the assumption that the non-equilibrated concentration of the charge-carriers in the sample is small as compared to the equilibrated one, and that the lifetime of the unreal charge-carrier is not dependent on their concentration. The dependence of the measurement results for the lifetime on the parameters of the injecting impulse is investigated and the conditions for a correct measurement are determined. On the basis of the analysis given here the absolute usability of this method for the determination of the

Card 1/2

57-27-7-3/40

Lifetime Measurements of Charge-Carriers in Semiconductors

lifetime of the not real charge-carriers in the semiconductors is proved. In comparison with other measuring methods this one has the following advantages: no collector-contact is needed, smaller sensitivity toward the surface finish, the possibility to determine local values for the lifetime immediately at the bars. There are 7 figures, 1 table, and **10 references, 2 of which are Soviet.**

SUBMITTED: November 1, 1956

AVAILABLE: Library of Congress

1. Semiconductors-Electrical properties-Measurement

Card 2/2

AUTHORS: Iglitsyn, M. I., Kontsevoy, Yu. A., Kudin, V. D., 57-27-7-4/40

TITLE: Lifetime Measurements in Monocrystal-Silicon (Izmereniye vremeni zhizni v monokristallicheskom kremnii).

PERIODICAL: Zhurnal Tekhnicheskoy Fiziki, 1957, Vol. 27, Nr 7, pp. 1425-1430 (USSR)

ABSTRACT: The method is based on the measurement of the modulated conductivity in the domain of a point-contact during the passage of two consecutive current-impulses. The lifetime measurements are compared to the measurement results for the diffusion-length obtained by the photoelectric method (with movable light probe). It is shown that both data are in good agreement. The dependence of the lifetime of charge-carriers on temperature was examined. It is shown that in a wide temperature range of from 200 to 630°K for most of the silicon-samples with a p- and n-conductivity the variation-character of the lifetime of unreal charge-carriers in dependence on temperature is in agreement with the conclusions of the theory developed by W.Shockley and W.Read (Phys. Rev. 87, 835, 1952) and that it has a great similarity with the data obtained for germanium. It is shown that the ionization-energy of the recombination-centers lies in the range of from 0,13 to 0,18 eV. A completely different character of the dependence of lifetime on temperatue was determined in the case of a silicon-sample with

Card 1/2

Lifetime Measurements in Monocrystal-Silicon. 57-27-7-4/40

electron-conductivity. An essential decrease in the measured lifetime was here observed in the domain of the admixture-conductivity at rise of temperature from 0° to 100°C. Upon further rise of temperature the dependence of lifetime on temperature took place like in the other samples. Inthe case of intensive illumination the dependence of the lifetime on temperature in the entire temperature range investigated took a normal course. There are 5 figures, 1 table, and 17 references, 2 of which are Soviet.

SUBMITTED: November 1, 1956

AVAILABLE: Library of Congress

1. Single crystals-Conductivity-Measurement 2. Single crystals-Electrical properties-Measurement

Card 2/2

57-11-5/33

AUTHORS: Iglitsyn, M. I., Kontsevoy, Yu. A., Sidorov, A. I.

TITLE: Distribution of Non-equilibrium Current Carriers in the Basic Region of the p-n-Junction with a High Injection Coefficient (Raspredeleniye neravnovesnykh nositeley zaryada v bazovoy oblasti p-n-perekhoda s vysokim koeffitsiyentom in"yektsii).

PERIODICAL: Zhurnal Tekhn. Fiz., 1957, Vol. 27, Nr 11, pp. 2458-2460 (USSR).

ABSTRACT: The fundamental results of the solution of the equilibrium system for stationary conditions of a p-n-transition in semiconductors are given according to W. Shockley, i. e. for the electronic region of the p-n-transition with $\gamma \simeq 1$ in the case of an arbitrary injection level, with respect to the field outside the transition and the dependence of the lifetime on the injection level. A concrete case of a germanium with the specific resistance ρ:2 $\div$ 3 Ohm. cm is investigated. An equation is derived by means of which the analytic relation between the injection level in the vicinity of the p-n-transition and the density of the current can be determined by the junction in the forward direction (for the transition with $\gamma \gtrsim 1$). It is shown that in the vicinity of the p-n-transition the distribution of the non-equilibrium current carriers approaches an

Card 1/2

Lifetime of Non-equilibrium Current Carriers at Arbitrary Injection Levels.

57-11-6/33

the acceptor type which lie in the upper part of the forbidden zone at the distance 0,2 eV from the lower boundary of the conductive zone. A comparison of the results obtained here with reference data (Pearson, Read, Morin, Phys. Rev. 93, 666, 1954 and W. Read, Phil. Mag., 46, 111, 1955) admits the final conclusion that the recombination levels in the here investigated types correspond to the greatest extent according to their structure to the energy levels due to structural defects (dislocations).
There are 7 figures, 1 table, 1 Slavic reference.

SUBMITTED: May 8, 1957.

AVAILABLE: Library of Congress.

Card 2/2

24(4) PHASE I BOOK EXPLOITATION SOV/3140

Akademiya nauk Ukrainskoy SSR. Institut fiziki

Fotoelektricheskiye i opticheskiye yavleniya v poluprovodnikakh; trudy pervogo vsesoyuznogo soveshchaniya po fotoelektricheskim i opticheskim yavleniyam v poluprovodnikakh, g. Kiyev, 20-26 noyabrya 1957 g (Photoelectric and Optical Phenomena in Semiconductors; Transactions of the First Conference on Photoelectric and Optical Phenomena in Semiconductors...) Kiyev, 1959. 403 p. 4,000 copies printed.

Additional Sponsoring Agency: Akademiya nauk SSSR. Presidium. Komissiya po poluprovodnikam.

Ed. of Publishing House: I. V. Kisina; Tech. Ed.: A. A. Matveychuk; Resp. Ed.: V. Ye. Lashkarev, Academician, Ukrainian SSR, Academy of Sciences.

PURPOSE: This book is intended for scientists in the field of semiconductor physics, solid state spectroscopy, and semiconductor devices. The collection will be useful to advanced students in universities and institutes of higher technical training specializing in the physics and technical application of semiconductors.

COVERAGE: The collection contains reports and information bulletins (the latter are indicated by asterisks) read at the First All-Union Conference on Optical and Photoelectric Phenomena in Semiconductors. A wide scope of problems in semiconductor physics and technology are considered: photoconductivity, photoelectromotive forces, optical properties, photoelectric cells and photoresistors, the actions of hard and corpuscular radiations, the properties of thin films and complex semiconductor systems, etc. The materials were prepared for publication by E. I. Rashba, O. V. Snitko, K. B. Tolpygo, A. F. Lubchenko, and M. K. Sheynkman. References and discussion follow each article.

Photoelectric and Optical Phenomena (Cont.) SOV/3140

Card 7/16

I-Golitsyn, M. I.

S/058/62/000/004/109/160
A061/A101

AUTHOR: Iglitsyn, M. I.

TITLE: Improvement of the photoelectric method of measuring the length of the displacement by diffusion of nonequilibrium carriers in semiconductors (Theses)

PERIODICAL: Referativnyy zhurnal, Fizika, no. 4, 1962, 41, abstract 4E355 (V sb. "Fotoelektr. i optich. yavleniya v poluprovodnikakh", Kiyev, AN USSR, 1959, 148)

TEXT: The apparatus described serves for the automatic measurement of the displacement, L_d, by diffusion of nonequilibrium carriers using constant photoelectric response. The distance of the collector from the probe and lighting intensity are varied at the same time in the process. The time of change of L_d is ~0.5 min.

[Abstracter's note: Complete translation]

Card 1/1

81631
S/181/60/002/006/050
B122/B063

24.7700
AUTHORS: Iglitsyn, M. I., Kontsevoy, Y. A.

TITLE: Determination of the Physical Parameters of Recombination Centers Produced by Copper in Germanium

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 6, pp. 1148 - 1151

TEXT: Three levels are produced in the forbidden zone of germanium by impurities (in the article under review - copper). Recombination is influenced by the lower levels (in the center of the forbidden zone). In the article under review the authors studied the physical parameters of these levels, their position in the energy spectrum of germanium, the relationship between the capture cross sections of electrons and holes, and the temperature dependence of the cross section. For this purpose, the authors determined the dependence of lifetime of the minority carriers on the injection level and on temperature. Lifetime τ was measured in a temperature range of -150 to +100°C. For the determination of the recombination center parameters, the abovementioned dependence had to be determined with very low τ_0 and high injection levels τ_∞. Results yielded by the measurements

Card 1/3

81631

Determination of the Physical Parameters of Recombination Centers Produced by Copper in Germanium

S/181/60/002/06/19/050
B122/B063

germanium was observed. The authors finally thank Graduate Students G. P. Proshko and V. F. Titova for their assistance. There are 2 figures and 10 references: 5 Soviet.

SUBMITTED: July 27, 1959

Card 3/3

IX

82545

IGLITSYN, M. I.

S/181/60/002/007/025/042
B006/B060

24.7700

AUTHORS: Iglitsyn, M. I., Kolesnik, L. I.

TITLE: The Effect of Linear Dislocations on the Recombination of Charge Carriers in Germanium With Hole-type Conductivity

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 7, pp. 1542-1544

TEXT: It has recently been found that structural defects due to linear dislocations have a great effect on the recombination of minority carriers in semiconductors. In most cases, the reduction of the carrier lifetime due to the introduction of defects was investigated qualitatively. The few quantitative investigations yielded contradictory results. In the present paper the authors report on the effect of linear dislocations on the carrier recombination in single crystals of p-type germanium. The dislocations were produced by plastic deformation (bending) of the crystal at $\simeq 10^{-4}$ torr and 700°C. The dislocation density was determined by etching in the (111) plane. It amounted to $10^5 \div 10^6$ cm^{-2} (initial density: $\sim 10^3$ cm^{-2}). The Ge samples used were doped with Ga and had a resistivity

Card 1/3

The Effect of Linear Dislocations on the Recombination of Charge Carriers in Germanium With Hole-type Conductivity

S/181/60/002/007/025/042
B006/B060

σ_R = const $T^{-2.2}$, the curve $\tau = f(1/T)$ takes the course shown in Fig. 3. An activation energy of ΔE_D = 0.14 ev was determined from the slope of the straight line $\ln(\tau T^{-2.2}) = f(1/T)$. This value agrees with the results of Ref. 4, but not with those of Ref. 5 (0.22 ev). Finally, the authors thank V. K. Bichev for preparing the germanium samples, and L. A. Batavina for assistance in the experiments. There are 3 figures and 8 references: 3 Soviet, 3 US, 1 Japanese, and 1 British.

SUBMITTED: November 11, 1959

Card 3/3

9.4310

77366
SOV/109-5-3-20/26

AUTHORS: Iglitsyn, M. I., Kontsevoy, Yu. A., Temko, K. B.

TITLE: Calculation of Transient Processes in an n-p Junction at Arbitrary Injection Levels

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol 5, Nr 3, pp 508-513 (USSR)

ABSTRACT: This work was submitted to the III All-Union Conference on Semiconductor Theory in L'vov, in April 1959. Reference is made to previous investigations by different scientists of transient processes in the n-p junction. Figure 1 illustrates the operating conditions. As shown in Fig. 1, the voltage remains constant during time T until the concentration of the excess carriers drops to zero, then goes through zero and approaches the voltage of the source. The duration T of the transient process can be related to the lifetime of the charge carriers in the base zone. This paper is

Card 1/12

an attempt to study the transient process, taking into consideration the variation of lifetime at differing injection levels. A particular case $I_{dir} = I_{rev} = I$ is analyzed. The solution of this problem shows how the duration T of the transient process depends on the injection level, i.e., the direct current, under the assumption of a constant ratio of direct to reverse current. The relation of the transient process duration and lifetime of minority carriers in the base zone will be investigated also. The duration of transient process, T, depends on injection level. 1. Formulation of the Problem. The calculation is made for a plane p-n function with thick base and high electron mobility under the following assumptions: a. The concentration of recombination centers is low, and lifetime under steady conditions changes with injection level according to Shockley-Read.

Calculation of Transient Processes in an n-p Junction at Arbitrary Injection Levels

77966
SOV/109-5-3-20/26

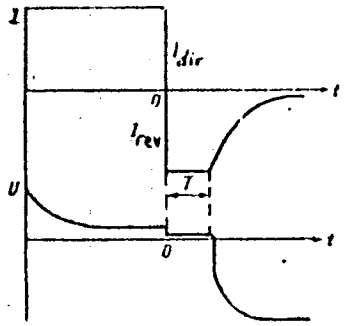


Fig. 1. The transient process in the n-p junction with regard to current and voltage.

Card 3/12

$$\tau = \tau_0 \frac{1 + \frac{\tau_\infty}{\tau_0} \frac{\delta p}{n_0}}{1 + \frac{\delta p}{n_0}}. \qquad (2)$$

Here, τ_0 and τ_∞ are the lifetimes of charge carriers at small and infinitely great injection levels, respectively; $\delta p/n_0 = \Delta$ is injection level, i.e., the ratio of excess charge carrier concentration to the equilibrium charge. b. Tne specific electric mobility of the p-zone is considerably higher than that of the n-zone. c. An injection level range with an injection coefficient $\gamma = j_p(0)/j(0)$ approximately equal to unity, is considered. d. When holes are injected into the base area electron neutrality is maintained; i.e., $\delta n \simeq \delta p$ and $dn/dt \simeq dp/dt$. e. The problem is solved in a one-dimensional approximation for an infinite conductor ($W \gg 3L$). In a general case the p-n junction can be described by a system of equations:

$$\frac{\partial n}{\partial t} = -c_n n p_t + c_n n_1 n_t + \frac{1}{q} \operatorname{div} j_n, \tag{3}$$

$$\frac{\partial p}{\partial t} = -c_p p n_t + c_p p_1 p_t - \frac{1}{q} \operatorname{div} j_p, \tag{4}$$

$$j_n = q D_n \frac{\partial n}{\partial x} + q \mu_n n E, \tag{5}$$

$$j_p = -q D_p \frac{\partial p}{\partial x} + q \mu_p p E, \tag{6}$$

$$j = j_p + j_n. \tag{7}$$

Here n and p are nonequilibrium concentrations of electrons and holes, respectively; n_t and p_t are electron and hole concentrations at local centers; c_n, c_p designate probability of their being captured by the local centers; n_1, p_1 are concentrations in the corresponding energy zone when the Fermi-level coincides with the level of the local center; D_n, D_p represent coefficient of electron and hole diffusion, respectively;

Card 5/12

j_n, j_p are electron and hole component of the density of full current j; μ_n, μ_p are electron and hole mobility; q is electron charge; E is electric field potential. Equations (3) to (7) clearly show the kinetics of recombination and thermal generation of charge carriers. This system of equations reduces to one equation in dimensionless variables:

$$\frac{\partial y}{\partial \theta} = \frac{1+2\Delta y}{1+1{,}5\Delta y}\frac{\partial^2 y}{\partial X^2} - \frac{jL_0}{2qn_0 D_p (1+1{,}5\Delta y)^2}\frac{\partial y}{\partial X} + \\ + \frac{\Delta}{2(1+1{,}5\Delta y)^2}\left(\frac{\partial y}{\partial X}\right)^2 - \frac{\dot{y}(1+\Delta y)}{1-\frac{\tau_\infty p_0}{\tau_0 n_0}+\frac{\tau_\infty \Delta y}{\tau_0}} \qquad (13)$$

where the following designations are used:

$$y = \frac{p(x)}{p(0)} - \frac{p_0}{\Delta n_0},\ \Delta = \frac{p(0)}{n_0},\ \theta = \frac{t}{\tau_0},\ X = \frac{x}{L_p},$$

Card 6/12

Here p(0) is the nonequilibrium hole concentration at the boundary of the p-n junction (x = 0) at steady state; $L_D = \sqrt{D_p \tau_0}$, diffusion length at low injection levels. The limiting conditions of this problem are written as:

$$\left.\frac{\partial y}{\partial X}\right|_{X=0} = \frac{jL_0}{qD_p \Delta n_0}\frac{1+\Delta y}{1+2\Delta y},$$
$$y|_{X=0} = 0. \qquad (14)$$

The relation between direct current density and injection level can be written as:

$$\frac{2(\Delta+1)\Delta}{(1+\Delta)\alpha(\Delta)}\sqrt{\frac{1+\Delta}{1+\frac{\tau_0}{\tau_0}\left(\Delta-\frac{p_0}{n_0}\right)}} = \frac{jL}{qn_0D_p}. \qquad (15)$$

$$\alpha(\Delta) = \frac{1.42}{3\Delta+2}\sqrt{\frac{6\Delta^3+16\Delta^2+11\Delta+2}{1+\Delta}}.$$

Card 7/12

The solution of the corresponding stationary equation is the initial condition of the problem. 2. Calculation of Distribution of Excess Carrier Concentration During Transient Process. Calculation was accomplished by a numerical method with a computer. At first, the stationary problem $j = j_{dir}$ was solved. Two values for τ_∞ / τ_o (0.1 and 10) were prescribed as well as different Δ values. The results are shown graphically in Fig. 2. Along the abscissa the distance from p-n junction $X = \frac{x}{LD}$ is plotted, while along the ordinate axis the concentration of excess charge carriers y is shown, both in dimensionless units. The curves of Fig. 2a are drawn at time intervals $\theta = t/\tau_o = 0.04$, while those of Fig. 2b are at $\theta = 0.08$. The duration of transient process T is determined by a decrease to zero of excess concentration at the p-n junction boundary with the base area; i.e., when $X = 0$. This dependence for τ_∞ / τ_o = 0.1 and 10 respectively, and various Δ values are

Card 8/12

Calculation of Transient Processes in an n-p Junction at Arbitrary Injection Levels

77966
SOV/109-5-3-20/26

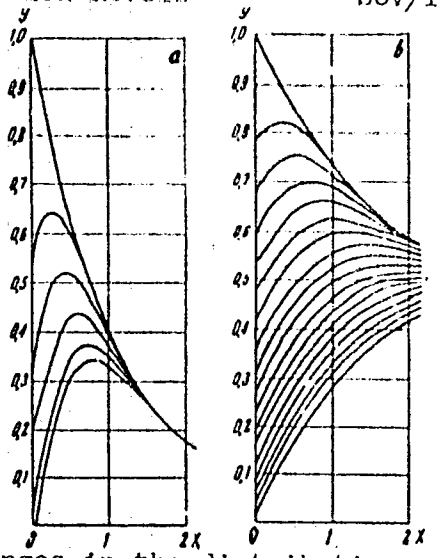


Fig. 2. Changes in the distribution of excess concentration in the base area of electron-hole junction, during transient process: (a) $\tau_\infty/\tau_0 = 0.1$; $\Delta = 0.5$; (b) $\tau_\infty/\tau_0 = 10$; $\Delta = 1$.

Card 9/12

shown in Fig. 3. The influence of τ_∞/τ_0 ratio on the duration of the transient process is very considerable, as shown in Fig. 4. An analysis of the above numerical calculations results in an approximate expression:

$$T(\Delta) = K\tau(\Delta). \qquad (16)$$

permitting an experimental determination of lifetime vs injection level according to transient characteristics of p-n junction with a thick base. A. I. Sidorov helped. There are 4 figures; 7 references, 3 Soviet, 4 U.S. The U.S. references are: C. A. Bittmann, G. Bemski, J. Appl. Phys., 28, 12, 1423 (1957); S. Lax, S. Neustadter, J. Appl. Phys., 25, 9, 1148 (1954); M. Byczkowski, J. R. Madigan, J. Appl. Phys., 28, 1, 8 (1957); R. H. Rediker, D. E. Sawyer, Proc. IRE, 45, 7, 944 (1957).

SUBMITTED: June 29, 1959

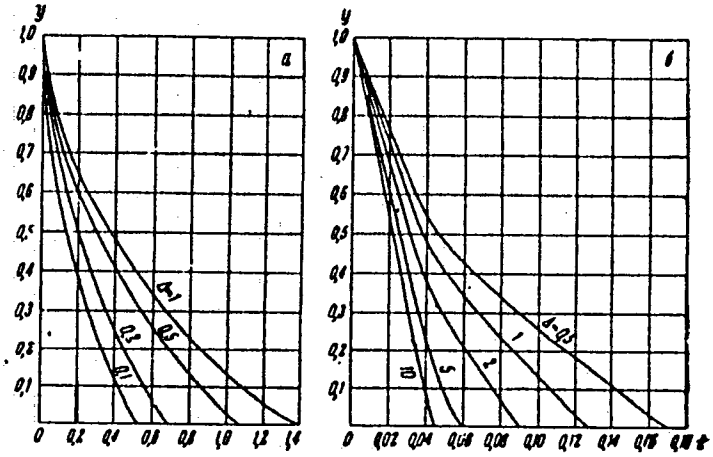


Fig. 3. Excess concentration at p-n junction boundary (X = 0) vs time during transient process (Δ is injection level at p-n junction boundary during transit time of direct current); (a) $\tau_\infty/\tau_0 = 10$; (b) $\tau_\infty/\tau_0 =$ 0.1.

Card 11/12

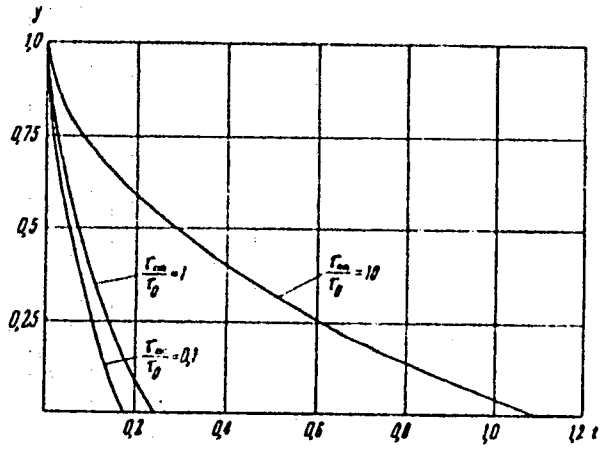


Fig. 4. Dependence of excess concentration at p-n junction boundary (X = 0) on time at Δ = 0.5 and various τ_{oo}/τ_o.

Card 12/12

MITEL'MAN, L.V.[translator]; GUZHOV, V.A.[translator]; PRESS, F.P. [translator]; IGLITSYN, M.I., kand. fiz.-mat. nauk, red.; BURAKOVA, O.N., red.; GARNUKHINA, L.A., tekhn. red.

[Methods for measuring the parameters of transistor devices] Metody izmereniia parametrov poluprovodnikovykh priborov. Pod red. M.I.Iglitsyna. Moskva, Oborongiz, 1961. 262 p. Translated from "Transistor technology." (MIRA 16:1)

1. Bell Telephone Laboratories, Inc.
(Transistors)

20800

S/181/61/003/003/027/030
B102/B205

9.4300 (1043, 1143, 1161)
26.2421

AUTHORS: Iglitsyn, M. I. and Mordkovich, V. N.

TITLE: Effect of copper on recombination processes in thermally treated silicon

PERIODICAL: Fizika tverdogo tela, v. 3, no. 3, 1961, 979-980

TEXT: It is well known that the minority-carrier lifetime of silicon is largely reduced by high-temperature treatment. A study has now been made of the reduction of the lifetime in n-type and p-type silicon specimens, by heat treatment at 800°C (30 min) and subsequent rapid cooling (80 deg/min). The characteristics of the specimens (size: 15 × 4 × 4 mm) and the results of the decrease in lifetime are illustrated in a table. It is assumed that dislocations are produced by the impurities during the heat treatment and the subsequent rapid cooling. The decrease in lifetime of the minority carriers observed in this process is explained as follows: 1) The impurities now separated from the dislocations act as recombination centers; 2) dislocations completely or partly separated from impurities take part in the recombination processes. This hypothesis was verified by heating some

Card 1/4

S/181/61/003/003/027/030
B102/B205

Effect of copper ...

specimens electrochemically coated with copper to a temperature of 900°C. The curves of Fig. 1 show the carrier lifetime as a function of the duration of heat treatment, viz., as a function of the amount of copper penetrated into the specimens. The dislocations are filled up by diffusive introduction of copper. Dislocation lines occupied by copper can be visualized in infrared light. Dislocations occupied by copper are neutralized, viz., they act no longer as recombination centers, which results in an increase in lifetime. This effect occurs only if the diffusive heating takes less than 1.5 hr. The diffusion of Cu into the volume of Si is much slower than the filling up of the dislocations. The Cu atoms introduced in this manner act as new recombination centers and, thus, the lifetime is again reduced if the diffusive heating takes more than 1.5 hr. There are 2 figures, 1 table, and 3 references: 1 Soviet-bloc and 2 non-Soviet-bloc. The reference to the English-language publication reads as follows: H. Theurer, J. El.-Chem. Soc. 104, 721, 1957.

SUBMITTED: September 12, 1960

9,4300 (1138, 1147, 1143)
26.2421
S/181/61/003/005/019/042
B136/B 201

AUTHORS: Kontsevoy, Yu. A. and Iglitsyn, M. I.

TITLE: Study of the steady photoconductivity and of the surface recombination rate in silicon

PERIODICAL: Fizika tverdogo tela, v. 3, no. 5, 1961, 1465 - 1474

TEXT: Previous papers (Ref.1: H. B. De Vore, Phys, Rev. 102, 86, 1956) have dealt with cases of the surface recombination rate s being the same or differing on the two sides of the test plates (Ref.3: V. A. Petrusevich, FTT., I, 62, 1959). It had been found in Ref.6 (H. M. Bath, M. Cutler, Phys. Chem. Solids, 5, No 3, 171, 1958) that the steady photoconductivity (henceforth referred to as SPC) in silicon changed nonlinearly with the intensity of exposure. Evidence had been offered in Ref.8 (Harten, Phil. Res. Rep., 14, 346, 1959) of s decreasing under exposure, especially in case of a surface treatment leading to the formation of inversion layers. The authors of the present paper studied SPC with volume and surface excitation as a function of the strength of exposure or of the injection level of the non-equilibrium carriers. New methods of measuring s were ob-

S/181/61/003/005/019/042
B136/B201

Study of the ...

tained, furthermore, by an analysis of the theory of SPC. Proceeding from the equation for the change of voltage with the passage of current through an exposed rectangular semiconductor plate, dimensionless quantities and the mean concentration $\bar{p}$ of the non-equilibrium carriers from the solution of the diffusion-recombination equation are introduced into the first-mentioned equation. A very unwieldy equation is then obtained, which is specialized for cases of pure volume and surface generation of pairs. The method of measuring the "constant photoresponse" is then derived. The basic construction of the experimental arrangement is shown in Fig.1. The light was modulated with 75-125 cycles and allowed to pass through a 2.5% $CuCl_2$ solution filter and a polished 6-mm silicon foil. An organic glass platelet was used for partial reflection into the Ge photodiode. The specimens were rotated about their longitudinal axis by 180°. In addition, it was possible to measure s at pressures of 10^{-5}mm Hg and in various gas media. s was measured by placing the point probe on the side facing the illuminated one, and by repeating the measurement after turning about 180°. The values obtained for s with silicon (Table 2) fit those obtained by the method of extinction of photoconductivity. The remarkable differences in the results

Card 2/6

Study of the ...

of the first two methods as compared to the latter (numerical) can be partly explained by the treatment of the specimens with HF and the measurement in humid N_2 atmosphere or in vacuo. The dependence of the emf of the photoconductivity $\bar{V}_{vol}$ and $\bar{V}_{surf}$ on the intensity of modulated light was measured with special accuracy by means of bilateral illumination as well as by grinding and etching of the surface. In case of a low recombination rate and a treatment leading to a band curvature on the surface, one obtains entirely deviating curves for $\bar{V}_{surf}=f(I)$ (I-current through semiconductor), which is related to the existence of slow states. A carrier exchange takes place between the layers near the surface and the slow states, due to which the surface potential rises, while s drops. A great number of measurements shows that a treatment with potassium bichromate leads to an electron exchange, which has a charging of the acceptor levels as a consequence. On a treatment with concentrated hydrofluoric acid in the presence of an atmosphere of humid nitrogen, holes are transferred from the valence band to donor levels. To determine the dependence of s on the intensity of injection precisely, function $\bar{V}_{vol}=f(I)$ was examined. $\bar{V}_{vol}$ grows more strongly than

Card 3/6

Study of the ...

$\bar{V}_{surf}$, which fact contradicts the theory. There are 4 figures, 3 tables, and 12 references: 4 Soviet-bloc and 8 non-Soviet-bloc. The three most recent references to English-language publications read as follows: Harten, Phil. Res. Rep., 14, 346, 1959; T. M. Buck, F. S. McKim, J. Electrochem. Soc., 105, no. 12, 709, 1958; A. H. Benny, F. D. Morten, Proc. Phys. Soc., 72, no. 468, 1007, 1958.

SUBMITTED: August 29, 1960 (initially)
December 15, 1960 (after revision)

Card 4/6

AUTHORS: Iglitsyn, M.I., Pashayev, A.M.

TITLE: Contactless high-frequency measurements of the ohmic resistance of semiconductors

PERIODICAL: Akademiya nauk Azerbaydzhanskoy SSR. Izvestiya. Seriya fiziko-matematicheskikh i tekhnicheskikh nauk, no.3, 1962, 69-75

TEXT: All the proposed methods for a contactless high-frequency measurement of semiconductors are based on the use of Q-meters. Since ΔQ - the difference in the Q values of the tank circuit without the semiconductor and with it - is very small the Q-meter is not sensitive enough. An instrument based on the method of impedance measurements in tank circuits with a differential reading of the ΔQ is described in this paper. The Q of a series resonant circuit to which the investigated sample is capacitively coupled is measured. The operating frequency is chosen according to the following con-

Card 1/3

S/233/62/000/003/003/010
I011/I211

Contactless high-frequency measurements...

The sample is introduced into the holder. The output meter is balanced and then switched to a more sensitive range. The sample is then withdrawn and the circuit is re-tuned to the frequency f_0. Q is read directly on the output meter. Samples of germanium and silicon carbide were measured. The results showed a good consistency over all the frequency range. Further investigations should be aimed at finding out the possibilities of determining the resistivity of semiconductors by this method. The personalities mentioned are: Professor G.B. Abdullayev, Shunyayev, I.N. Turkin, O. Karagioz. There are 7 figures.

Card 3/3

36894
S/181/62/004/004/039/042
B102/B104

24.7700

AUTHORS: Fistul', V. I., Iglitsyn, M. I., and Omel'yanovskiy, E. M.

TITLE: Electron mobility in germanium highly alloyed with arsenic impurity

PERIODICAL: Fizika tverdogo tela, v. 4, no. 4, 1962, 1065-1067

TEXT: The mobility of electrons was measured as dependent on their concentration in the range 77 - 300°K (in some cases 4.2-300°K) in n-type Ge single crystals doped with As (10^{15} - $4\cdot10^{19}$ cm^{-3}). In the electron concentration range $4\cdot10^{17}$ - $4\cdot10^{19}$ cm^{-3} the electron mobility dependence satisfies the empirical law $u = 1.52\cdot10^{10} n^{0.4}$ $cm^2/v\cdot sec$. Since the Hall constant in highly alloyed Ge is temperature independent in the range 4.2 - 300°K, i. e., all As atoms are totally ionized; the function u(T) coincides with σ(T) (σ - conductivity). The u(T) curves have an unexpected course as they have no indication to a scattering from thermal lattice vibrations. The most probable explanation of this result is the

Card 1/2

assumption of a reduction of mobility due to scattering from ionized impurities. There are 2 figures.

ASSOCIATION: Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut redkometallicheskoy promyshlennosti Moskva (State Design and Planning Scientific Research Institute of the Rare Metals Industry, Moscow)

SUBMITTED: December 9, 1961 (initially), January 12, 1962 (after revision)

PASHAYEV, A.M.; IGLITSYN, M.I.; VORONKOV, V.V.

Methodology of measuring the specific resistance of silicon bars using high frequencies. Izv. AN Azerb. SSR.Ser. fiz.-mat. i tekh. nauk no.3:139-142 '63. (MIRA 16:11)

ACCESSION NR: AP4012597 S/0233/63/000/005/0055/0058

AUTHORS: Pashayev, A.M.; Iglitsyn, M.I.; Shunyayev, V.G.

TITLE: Measurement of the specific resistivity of silicon by the contactless method at high frequency

SOURCE: AN AzerbSSR. Izv. Ser. fiz.-matem. i tekhn. nauk, no. 5, 1963, 55-58

TOPIC TAGS: specific resistivity, silicon resistivity, semiconductor, contactless resistivity measurements, solid state physics

ABSTRACT: The present paper desribes an adaptation of the contactless method of the specific resistivity measurement of silicon published earlier by other authors (see P.S. Olshefski, "Seniconductor product" December 1961). High frequency currents (from 20 to 25 MC) were produced in the specimens by capacitive coupling. The influence of the skin effect on measurements was negligible. The results are compared with those obtained by the twv-probe method. The precision was about ± 10%. The apparatus permits

Card 1/2

ACCESSION NR: AP4012597

measurements of specific resistivity over the range from 2 to 3000 ohm X cm. Orig. art. has: 6 figures and 2 tables.

ASSOCIATION: None

SUBMITTED: 00	DATE ACQ: 26Feb64	ENCL: 00
SUB CODE: PH, GE	NO REF SOV: 002	OTHER: 003

Card 2/2

IGLITSYN, M.I.

AID Nr. 971-20 20 May

INDUCTIVE PROPERTIES OF SEMICONDUCTOR ELECTRON-HOLE JUNCTIONS (USSR)

Iglitsyn, M. I., and V. I. Fistul'. IN: Akademiya nauk SSSR, Doklady, v. 149, no. 3, 21 Mar 1963, 577-579. S/020/63/149/003/014/028

Experimental results obtained in the course of a study conducted according to a previously described phase method, of nonequilibrium carrier lifetimes in strongly doped germanium indicate the presence of induction in thin electron-hole junctions. Sample germanium p-n junction diodes with impurity concentrations of $4.6 \cdot 10^{19}$ and $9.5 \cdot 10^{19}$ cm^{-3} were used, with an n-type inversion layer introduced into the germanium by a melt of lead with 3 to 10% arsenic. The junctions had a considerable area and a capacitance of 130 to 200 pF. Volt—ampere curves of the junctions show a pronounced tunnel effect, indicating the thinness (of the order of 200 Å) of the junction

Card 1/2

AID Nr. 971-20 20 May

INDUCTIVE PROPERTIES [Cont'd] S/020/63/149/003/014/028

regions. A plot of voltage versus current phase angle, obtained at a frequency of 2 Mc, shows that the voltage—phase curves of thin junctions have no plateau. The phase decreases with increased voltage, attaining negative phase values; this is interpreted as evidence of induction. The induction values calculated for the samples are at least 1.5 orders less than those of the diode armatures, showing the effect to be a property of the junction itself. The effect is expected to find many applications, particularly in solid-state high-frequency devices.

[BB]

Card 2/2

IGLITSYN, M.I.; PASHAYEV, A.M.; SHUNYAYEV, V.G.; VORONKOV, V.V.

Noncontact measurement of the specific resistance of semiconductors. Zav.lab. 29 no.11:1324-1326 '63. (MIRA 16:12)

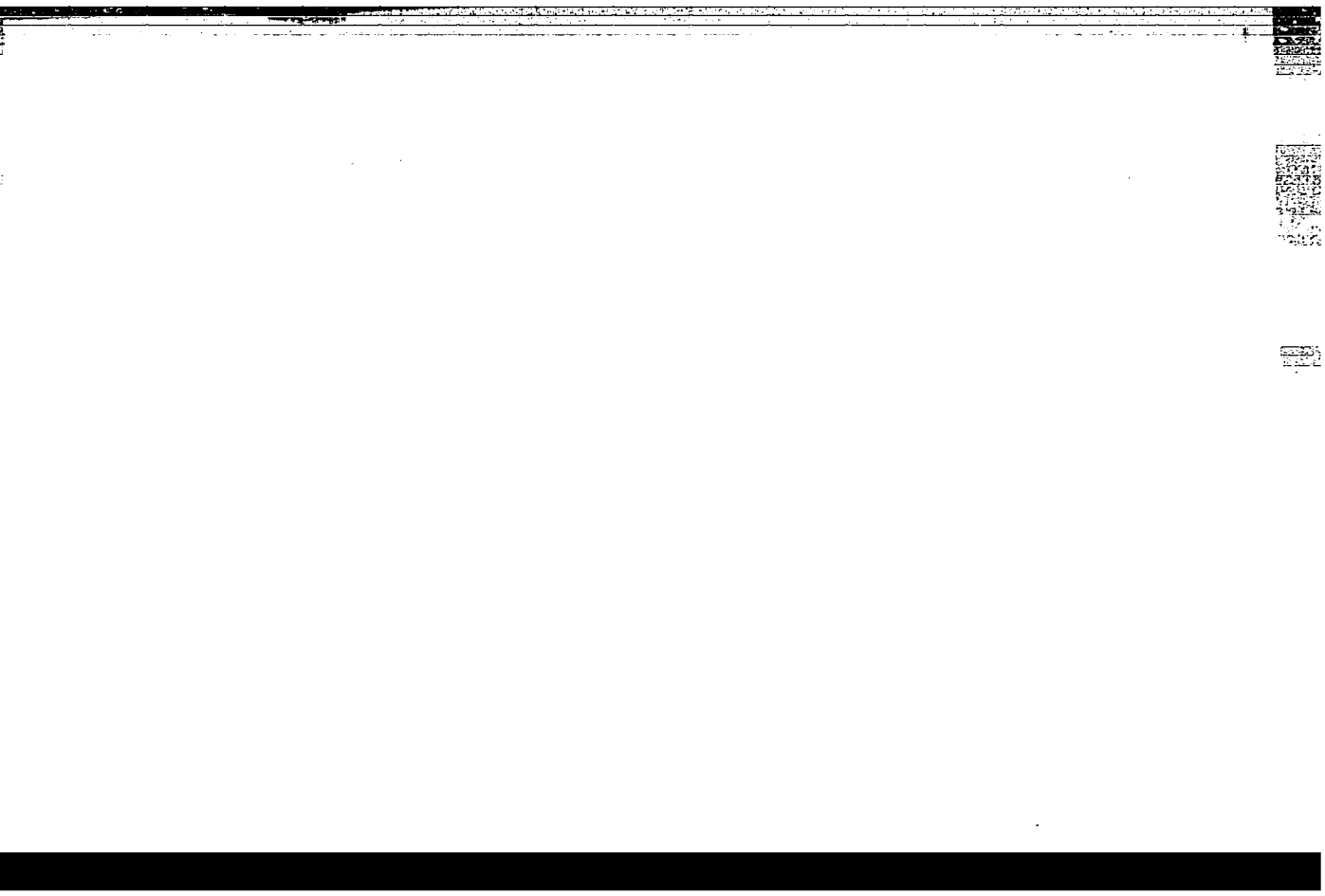
1. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut redkometallicheskoy promyshlennosti.

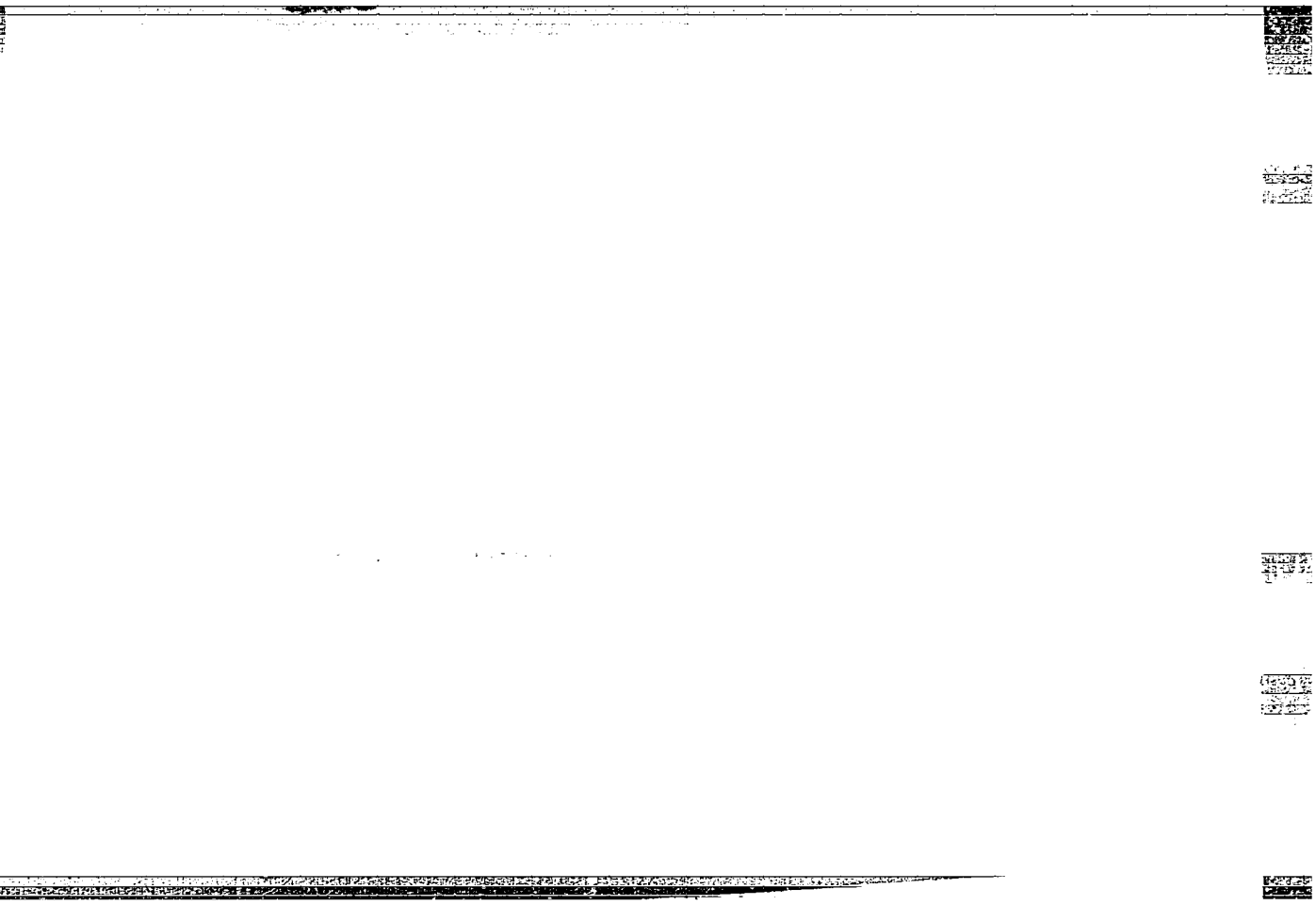
IGLITSYN, M. I.; VORONKOVA, G. I.; VORONKOV, V. V.; GLARIOSOVA, R. I.; SOLOVYEVA, E. V.; SUSHKOV, V. P.: UKHROVA, E. S.

"The investigation of the recombination processes in single crystals of Si, Ge."

report submitted for Intl Conf on Physics of Semiconductors, Paris, 19-24 Jul 64.

State Sci Res Inst of Rare Metals, Moscow





ACCESSION NR: AP4019862 S/0181/64/006/003/0936/0938

AUTHORS: Iglitsyn, M. I.; Kekelidze, G. P.

TITLE: Effect of dislocations on changes in optical absorption during heat treatment of silicon

SOURCE: Fizika tverdogo tela, v. 6, no. 3, 1964, 936-938

TOPIC TAGS: crystal lattice dislocation, optical absorption, optical activity, dislocation effect

ABSTRACT: The authors have studied the nature of optically active oxygen in silicon, attempting to explain the role of dislocation in changing the optical properties of silicon during heat treatment. In particular, changes in optical absorption were studied for the wave length 9.0 microns during prolonged heat treatment at 1000C with different dislocation densities. Two series of samples were studied (n-type and p-type), with resistivities ranging from 0.8 to 185 ohm cm and doped with Sb and B respectively. The first series had a dislocation density of 10^3 cm^{-2}, the second a range in dislocation densities, none exceeding 10 cm^{-2}. The effect of dislocations on optical absorption is summarized in Fig. 1 on the

Card 1/3

ACCESSION NR: AP4019862

Enclosure. The results obtained confirm the view that oxygen dissolved in Si is redistributed during deformation, joining with Si to form SiO_2. Differences in behavior of Si samples having different distribution densities point to a definite role of dislocations in the formation of optically active oxygen. The growth of the absorption coefficient (for $\lambda = 9.0\mu$) in samples with a dislocation density of $10^3 cm^{-2}$, at the beginning of heat treatment, may be associated with secondary settling of oxygen at dislocations and with the transition of this oxygen to the optically active state. In specimens free of dislocations this is impossible, and heat treatment leads to decay of optically active oxygen. Any optically active oxygen present in dislocation-free Si is apparently associated with other defects, and the bond with these defects appears to be weaker than with dislocations. Orig. art. has: 2 figures.

ASSOCIATION: Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut redkometallicheskoy promyshlennosti, Moscow (State Scientific Research and Planning Institute of the Rare-Metal Industry)

SUBMITTED: 30Sep63 DATE ACQ: 31Mar64 ENCL: 01

SUB CODE: OP, SS NO REF SOV: 000 OTHER: 004

Card 2/3

ACCESSION NR: AP1019862

ENCLOSURE: 01

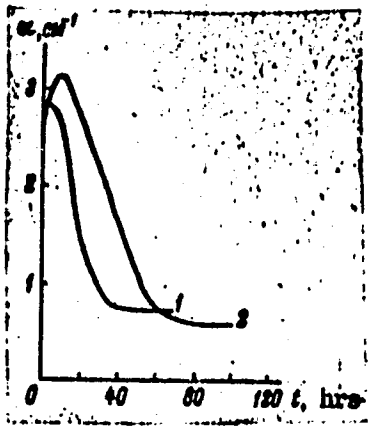


Fig. 1. Dependence of the coefficient of optical absorption (for a wave length of 9.0 microns) on the length of heat treatment. 1 - dislocation-free Si; 2 - Si with dislocation density of $10^3 cm^{-2}$.

Card 3/3

ACCESSION NR: AP4034947 S/0181/64/006/005/1552/1554

AUTHORS: Gulyayeva, A. S.; Iglitsyn, M. I.; Petrova, L. V.

TITLE: The lifetime of charge carriers in disequilibrium in single crystals of indium antimonide

SOURCE: Fizika tverdogo tela, v. 6, no. 5, 1964, 1552-1554

TOPIC TAGS: charge lifetime, temperature dependence, photogalvanometric determination, photoconductive determination, charge carrier adhesion, Auger recombination

ABSTRACT: The temperature dependence of the lifetime of nonequilibrium charge carriers in InSb was investigated. Naturally alloyed (zone-melting) single crystals of both p and n types having a basic carrier concentration of 7×10^{13} - 4.5×10^{14} per cm^3 were studied in the 78-300K temperature range. Measurements were made by photogalvanometric (PM) and photoconductive (PC) methods. A 500-watt tungsten light source was modulated at 1100 cps. The magnetic field was 0.205 webers/m^2. The samples were 14 x 4 x 1.5 mm^3 parallelograms polished and cleansed with CP-4A. Comparison was made with theoretical relationships presented by S. Kurnick and R. Zitter (J. Appl. Phys., 27, 278, 1956) and by R. Zitter, A. Strauss, and A. Attard (Phys. Rev., 115, 226, 1959). Typical results are shown in Figures 1 and 2 on the

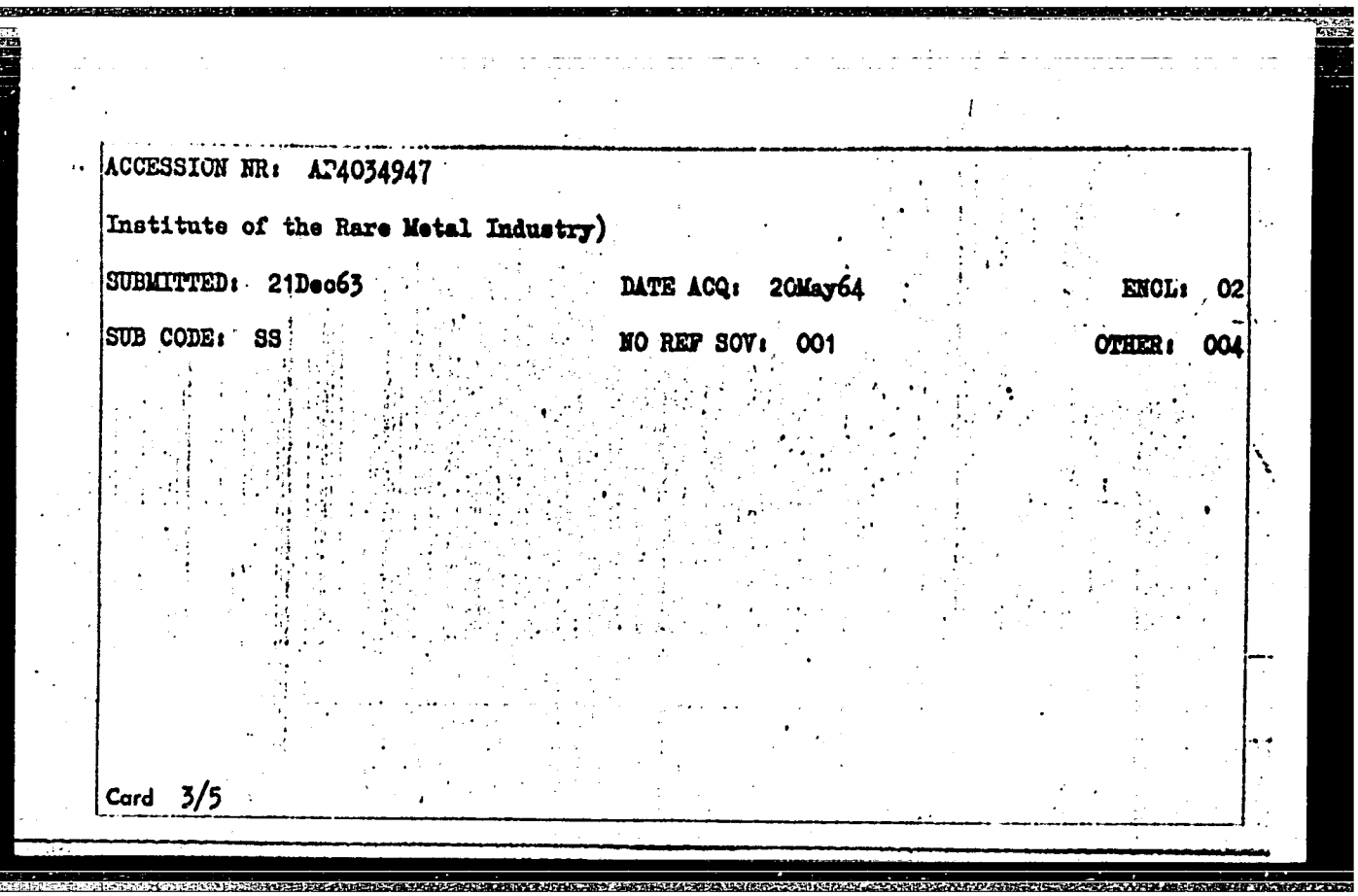
Card 1/5

ACCESSION NR: AP4034947

Enclosures. The character of the curves was the same for both measurement methods. For all samples (except a few n-type ones near the liquid nitrogen temperature) results differed ($\tau_{FC} > \tau_{FM}$) due to the adhesion of secondary carriers. At higher temperatures the difference disappeared, and the lifetime reached a maximum τ_{max} of 4×10^{-7}-7×10^{-7} sec between 170 and 200K. The results, when analyzed together with the general theory of recombination and the previous experimental data, showed that it was necessary to consider two separate temperature ranges. Below 250K, recombinations of local centers predominated. The defining parameters were charge concentration, energy state, and degeneracy multiple. In this study samples contained uninvestigated residual contaminants, so that the parameters remained unknown. By assuming that recombinations occurred at the centers with the same parameters as those given by R. Laff and H. Fam (Phys. Rev., 121, 53, 1961), calculations were made to give electron τ_n and hole τ_p lifetimes. Experimental values and theoretical calculations differed by a value greater than could be explained by normal error. At temperatures above 250K Auger recombinations are most important. Orig. art. has: 2 figures.

ASSOCIATION: Gosudarstvenny*y nauchno-issledovatel'skiy i proyektny*y institut redkometallicheskoy prom*shlennosti, Moscow (State Scientific Research and Design

Card 2/5



ACCESSION NR: AP4034947

Institute of the Rare Metal Industry)

SUBMITTED: 21Dec63 DATE ACQ: 20May64 ENCL: 02

SUB CODE: SS NO REF SOV: 001 OTHER: 004

Card 3/5

ENCLOSURE: 01

ACCESSION NR: AP4034947

Fig. 1. Temperature characteristics of lifetime in p-type InSb.
(1) τ_{FM} and τ_n; (2) τ_{FO}; (3) τ_p.
$N_A - N_D = 2.5 \times 10^{14}$ cm^{-3}; $\tau_{FM} = \tau_n$.

Card 4/5

ACCESSION NR: AP4034947 ENCLOSURE: 02

Fig. 2. Temperature characteristics of lifetime in n-type InSb.
(1) τ_{FM}; (2) τ_{FC}.

$N_D - N_A = 1.2 \times 10^{14}$ cm^{-3}.

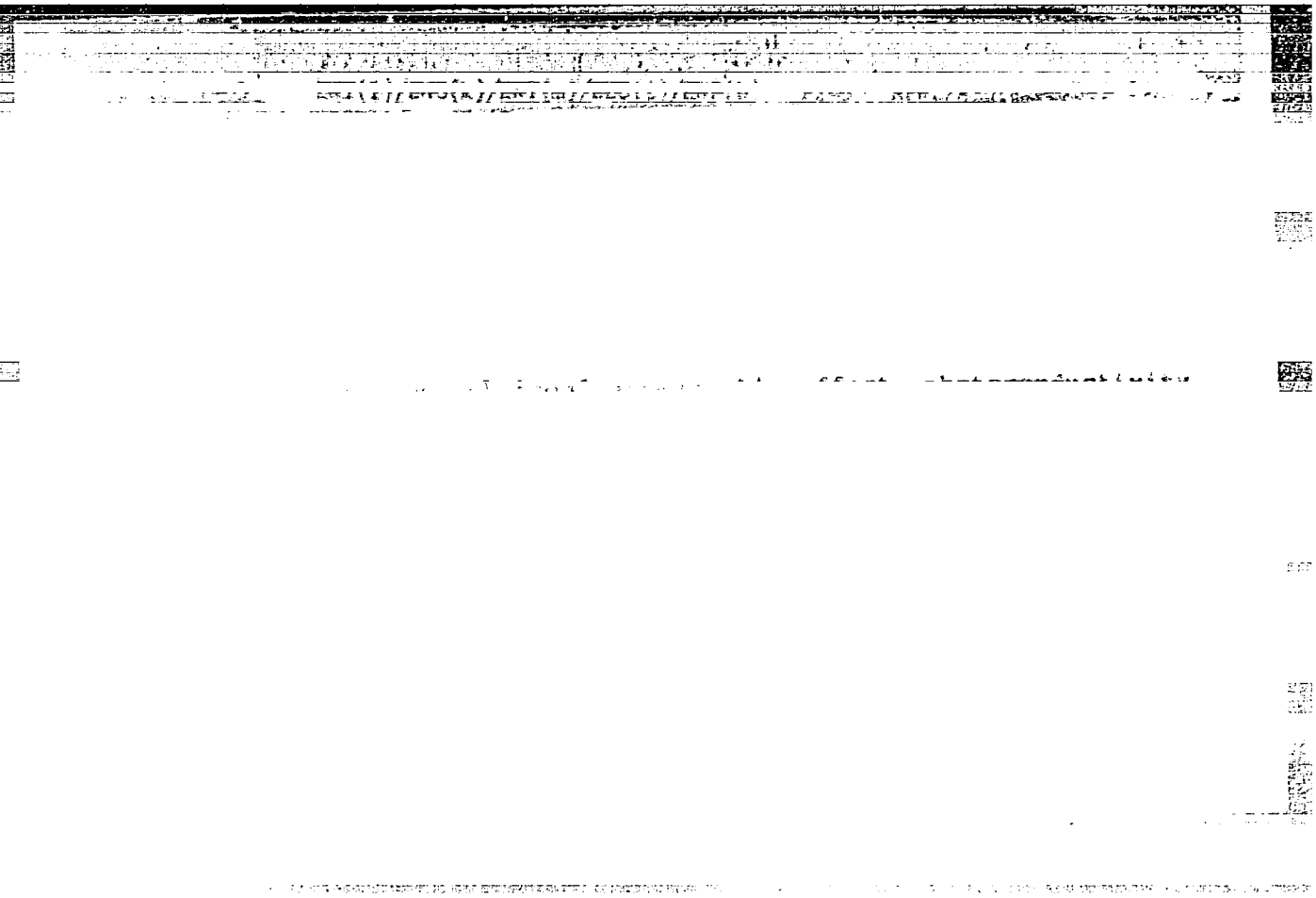
Card 5/5

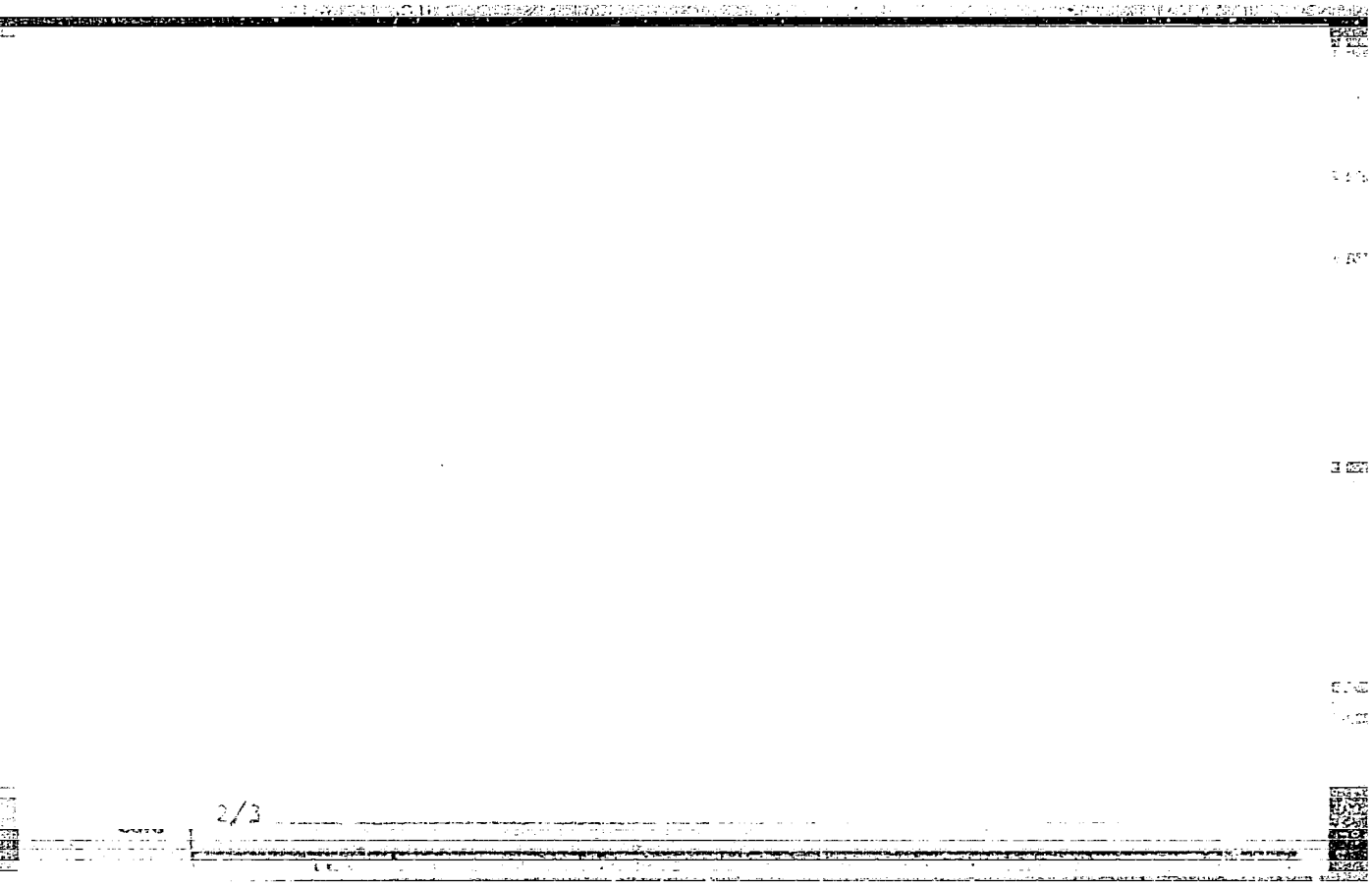
AUTHOR: Iglitsyn, M. I.; Mirzabayev, M.; Tuchkevich, V. M.; Fedotova, Ye. P.; Shakhtakhtinskiy, Yu. V.

[illegible] Fizika tverdogo tela, v. 6, no. 9, 1964, 2679-2682

[illegible]silicon carbide, n type silicon carbide, galvanomagnetic [illegible]

[illegible] characteristic of impurity conductivity, the negative magneto- [illegible]





IGLITSYN, M.I.; KIKELIDZE, G.P.; LAZAREVA, G.V.

Determining the oxygen content in silicon by the lithium diffusion method. Fiz. tver. tela 6 no.10:3148-3150 O '64.
(MIRA 17:12)

1. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut redkometallicheskoy promyshlennosti, Moskva.

ACCESSION NR: AP4013306 S/0032/64/030/002/0197/0201

AUTHORS: Iglitsyn, M. I.; Levinzon, D. I.; Chernopisskiy, V. U.

TITLE: Uniformity control in germanium single crystals using the single probe method

SOURCE: Zavodskaya laboratoriya, v. 30, no. 2, 1964, 197-201

TOPIC TAGS: resistivity, germanium crystal, electrical contact, differentiating RC-circuit, semiconductor

ABSTRACT: The method and experimental details for automatically recording the resistivity distribution over a bar of germanium crystal have been described. The method consists of measuring the potential drop V(x) between a probe, moving over the crystal surface x, and an electrical contact in a differentiating RC-circuit. The resistivity is determined from the expression

$$V = RC \cdot v \frac{I}{s} \rho(x),$$

where v - probe speed, s - crystal area, I - current. The speed v is varied

Card 1/2

ACCESSION NR: AP4013306

within (2-3) x 10^{-3} cm/sec, R = 3 kohm, C = 102 μf, registering resistivities $\rho(x)$ of the order 0.1 to 50 ohm. cm. The analysis is based on the assumption of negligible intermediate resistance between probe (pen) and semiconductor. Some of the components in the circuit include: a potentiometer EPP-09 type 4, amplifier N-373-1 and ferroresonance stabilizer type S-0.5. The results show a uniform statistical fluctuation in $\rho(x)$ along a mean value. Orig. art. has: 3 figures and 1 table.

ASSOCIATION: Gosudarstvenny*y nauchno-issledovatel'skiy i proyektny*y institut redkometallicheskoy prom*shlennosti (State Scientific Research and Project Institute of the Rare Metal industries)

SUBMITTED: 00 DATE ACQ: 26Feb64

SUB CODE: PH NO REF SOV: 002 ENCL: 00

OTHER: 003

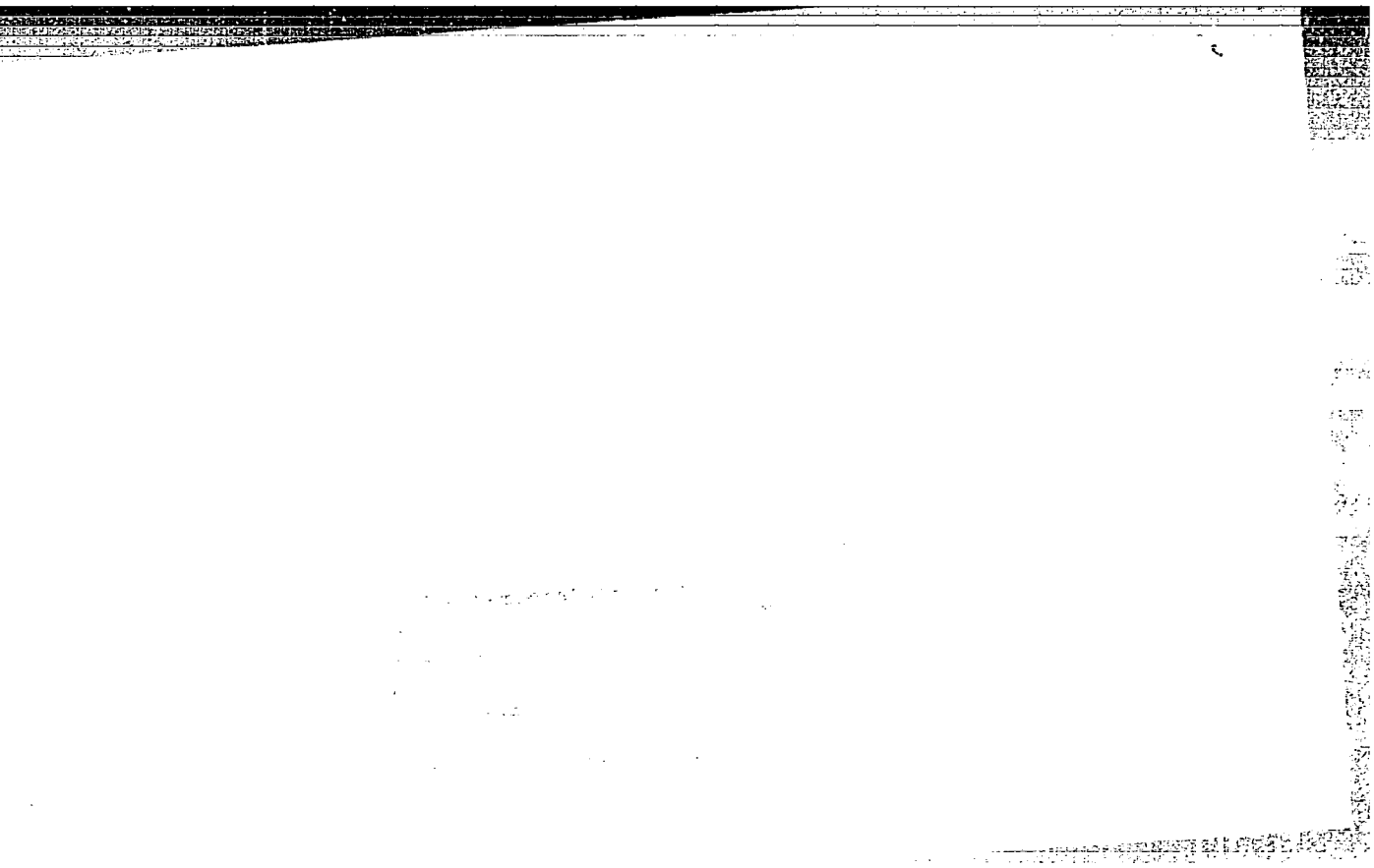
Card 2/2

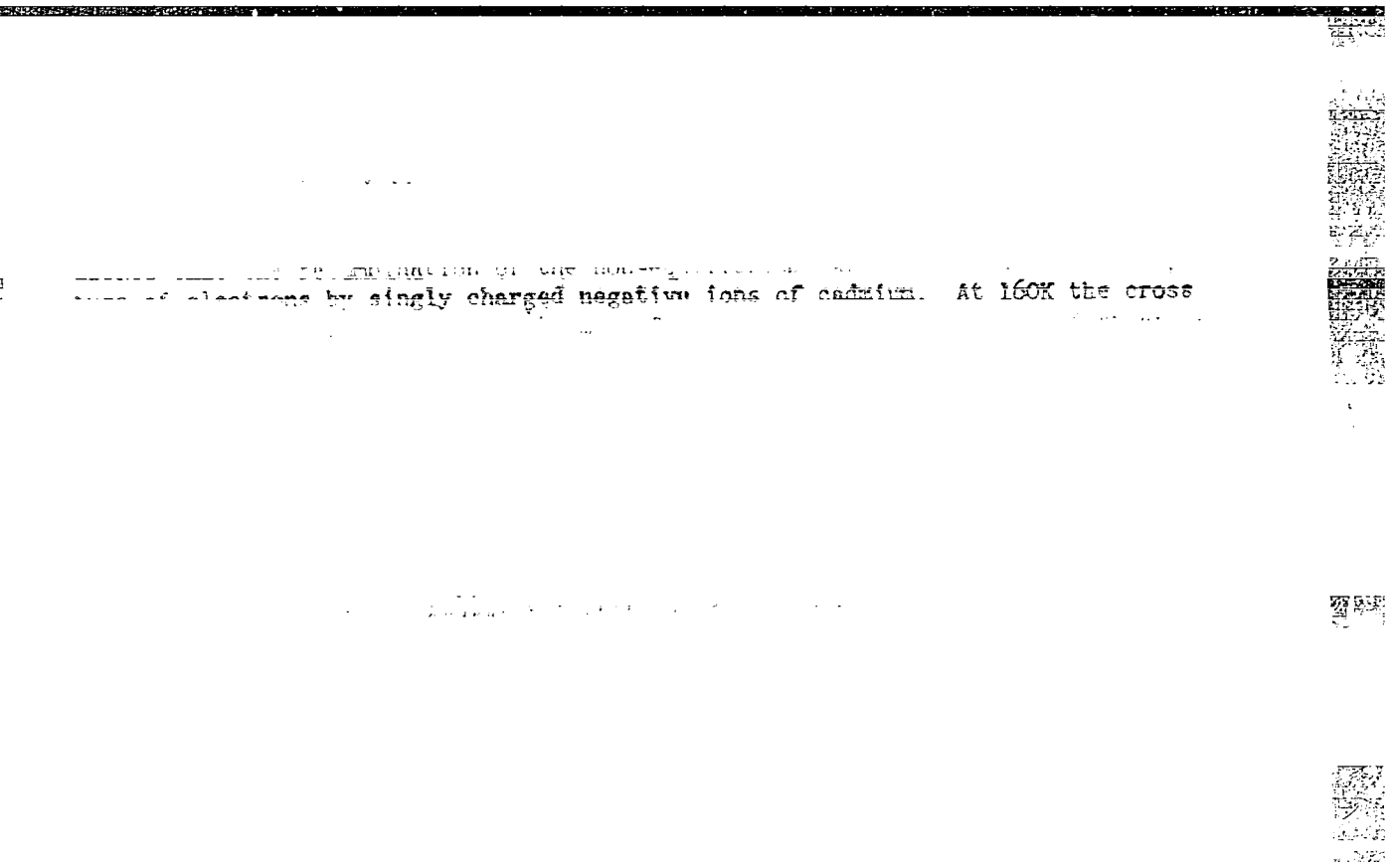
SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 1, no. 2, 1965, 311-315

[redacted]

[redacted] in p- and n-type samples [redacted] electrically charged [redacted]

[redacted]





by singly charged negative ions of cadmium. At 160K the cross

L 9570-66 EWT(l)/EWT(m)/EWP(t)/EWP(b) IJP(c) JD
ACC NR: AP5027438 SOURCE CODE: UR/0181/65/007/011/3433/3435

AUTHOR: Iglitsin, M. I.; Solov'yeva, Ye. V.

ORG: State Design and Planning Scientific Research Institute of the Rare Metals Industry, Moscow (Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut redkometallicheskoy promyshlennosti)

TITLE: Recombination of non-equilibrium charge carriers in single crystals of indium arsenide

SOURCE: Fizika tverdogo tela, v. 7, no. 11, 1965, 3433-3435

TOPIC TAGS: carrier lifetime, radiative recombination, recombination reaction, indium compound, arsenide, single crystal

ABSTRACT: The authors study the general laws pertaining to recombination of non-equilibrium charge carriers in indium arsenide for a more precise definition of the recombination mechanisms which dominate in actual specimens of this compound with various concentrations of equilibrium charge carriers and at various temperatures. The samples used were naturally alloyed single crystals of *n*-InAs. Lifetimes were measured for non-equilibrium carriers emitted under white light illumination. A comparison is made between data from photoelectromagnetic measurements, and those from photoconductivity measurements. It is found that the lifetimes of electrons and holes

Card 1/2

L 9570-66

ACC NR: AP5027438

practically coincide. Curves are given for carrier lifetime as a function of temperature. Analysis shows that the lifetime is nearly independent of temperature between 83 and 140°K. There is a sharp exponential reduction in carrier lifetime when the temperature is increased past this point. Lifetimes of 10-0.1 μsec were observed in the region of the low-temperature plateau. It is assumed that these unusually long lifetimes are due to the combined effect of radiative and impact recombination. Experimental and theoretical curves for carrier lifetime as a function of concentration are compared. These curves show satisfactory agreement which confirms the hypothesis on the joint action of radiative and Auger recombination. The authors are grateful to D. A. Vlasov for furnishing the InAs specimens. Orig. art. has: 2 figures, 1 table.

SUB CODE: 20/ SUBM DATE: 07Jun65/ ORIG REF: 002/ OTH REF: 001

Card 2/2

IGLITSYN, M.I.; MEYYER, A.A.; KARAGIOZ, O.V.; LEVINZON, D.I.; IVANOV, A.V.

One-probe method for measuring the specific resistance of semiconductors carrying a-c current. Zav. lab. 31 no.9:1092-1094 '65.
(MIRA 18:10)

1. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut redkometallicheskoy promyshlennosti.

L 12924-66 (A) EWT(1)/EWT(m)/EWP(t)/EWP(b) IJP(c) JD/WW/GG

ACC NR: AP6000182 SOURCE CODE: UR/0032/65/031/012/1450/1451

AUTHOR: Iglitsyn, M. I.; Ivanova, I. I.; Konstantinova, G. Ye.; Kosaganova, M. G.; Pavlov, N. M.

ORG: State Scientific Research and Design Institute of Rare Metals Industry (Gosudarstvennyy nauchno-issledovatel'skiy i proektnyy institut redkometatallicheskoy promyshlennosti)

TITLE: Determination of nitrogen content in α-SiC by EPR technique 21,44,55

SOURCE: Zavodskaya laboratoriya, v. 31, no. 12, 1965, 1450-1451

TOPIC TAGS: silicon carbide, EPR, Hall effect, nitrogen, single crystal

ABSTRACT: An attempt was made to use EPR technique for determining nitrogen content in single crystals of hexagonal silicon carbide (α-SiC). The method is based on determining the number of paramagnetic centers (nitrogen atoms) in a crystal sample by comparing its EPR spectrum with the spectrum of a reference sample ($CuSO_4 \cdot 5H_2O$). Both spectra were taken at the liquid nitrogen temperature with a PE 1301 radiospectrometer. The relationship between the concentration of the free charge carriers at room temperature as determined from the Hall effect (n_{Hall}) and the concentration of non-compensated and non-ionized nitrogen centers at the liquid nitrogen temperature (N_{EPR}) is: $N_{EPR} = 4.87\, n_{Hall}$. All the experimental results obtained with silicon carbide samples

Card 1/2 UDC: 543.42

L 12924-66

ACC NR: AP6000182

with various nitrogen contents are to the right of the $N_{EPR} = 4.87\, n_{Hall}$ line (see fig. 1). This indicated that EPR technique gives only the concentration of the non-compensated nitrogen centers while the technique based on the Hall effect is indiscrimina-

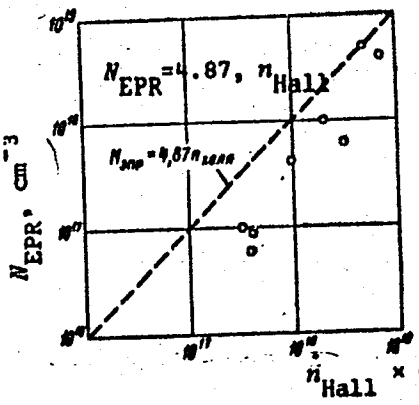


Fig. 1. Comparison of the results obtained by the EPR technique and on the basis of Hall effect.

tive (gives all non-compensated ionized donor centers). The accuracy of the EPR technique is better by one-half of an order of magnitude. The EPR technique is recommended as a rapid method of determining nitrogen content in silicon carbide crystals.

Orig. art. has: 2 figures, 1 table.

SUB CODE: 07,20/ SUBM DATE: 00/ ORIG REF: 001/ OTH REF: 001

Card 2/2

L 40367-66 EWT(m)/EWP(t)/ETI LJP(c) JD

ACC NR: AP6014244 SOURCE CODE: UR/0109/66/011/005/0894/0900

AUTHOR: Iglitsyn, M. I.; Pervova, L. Ya.; Fistul', V. I.

ORG: none

TITLE: Instability in gold-doped n-type germanium upon carrier injection

SOURCE: Radiotekhnika i elektronika, v. 11, no. 5, 1966, 894-900

TOPIC TAGS: germanium semiconductor, semiconductor research

ABSTRACT: Sb- and Au-doped n-Ge 1x1-mm plates (0.003-mm thick) were tested; three lots of specimens had these parameters:

Lot	ρ ohm·cm 300°K	ρ ohm·cm 77°K	N_{Au}, per cm³	$\frac{N_{Sb}-N_{Au}}{N_{Sb}}$ %	
B	3	60	$6\cdot10^{14}$	107	$2N_{Au} < N_{Sb} < 3N_{Au}$
A	3	585	$6\cdot10^{14}$	101	
C	2,3	$>10^6$	$1{,}2\cdot10^{15}$	68	$N_{Au} < N_{Sb} < 2N_{Au}$

The deep-level specimens were tested for: I-V characteristics, susceptance vs. current characteristic, frequency characteristics, and effect of illumination.

Card 1/2 UDC: 539.293.011.263.2:546.289

L 40367-66

ACC NR: AP6014244 O

The electric current instability was recorded. Lots A and C exhibited a complex pattern of instability which could be explained by the fact that the minority-carrier injection took place in a strong electric field (thousands v/cm), while in B-lot specimens, the injection occurred in a rather weak (850 v/cm or lower) field. On the strength of the above tests and results reported by M. Kikuchi et al. (J. Phys. Soc. Japan, 1962, 17, 8, 1268) and other sources, the mechanism of the instability phenomena is conjectured. Orig. art. has: 4 figures and 1 table.

SUB CODE: 09 / SUBM DATE: 12Jan65 / ORIG REF: 006 / OTH REF: 004

Card 2/2 hs

46249-65 EWT(1)/T IJP(c) AT

ACC NR: AP6028919 SOURCE CODE: UR/0233/66/000/001/0085/0089

AUTHOR: Pashayev, A. M.; Iglitsyn, M. I.; Turkin, I. N.

ORG: none

TITLE: Instruments for the measurement of the resistivity of strongly doped semiconductors

SOURCE: AN AzerbSSR. Izvestiya. Seriya fizko-tekhnicheskikh i matematicheskikh nauk, no. 1, 1966, 85-89

TOPIC TAGS: semiconductor conductivity, resistivity, silicon semiconductor, germanium semiconductor, electric measurement, Q factor

ABSTRACT: The operation of the described instruments is based on recording the change in Q of a tank circuit when the semiconductor sample is introduced into the field of a pickup. The eddy current induced in the sample change the Q of the high-frequency pickup, thereby introducing additional loss in the tank circuit. The change in the electric parameters of the pickups, which are fed with hf current, depends at a given frequency on the geometric dimensions and conductivity of the sample in the pickup field, and on the relative positions of the pickup and sample. The measurements were

Card 1/2

L 62[illegible]-66

ACC NR: AP6028919

made on strongly doped silicon and germanium having resistivities in the range 0.0001 -- 10 ohm-cm. Two types of pickup, an inductance with brass core, and a torroidal inductance with ferrite core and air gap, were used to cover this resistivity range. The sample position relative to the coil was adjusted and fixed with a micromanipulator. The construction of the pickups and the diagrams and characteristics of the measuring circuits are given. Methods of confining the hf field to a narrow region in space and thus increasing the resolution of the measuring apparatus are described. A test of the effect of the surface finish on the measuring accuracy showed that some grinding or polishing of the sample is necessary for the results to be reproducible, but the degree of surface polish is not critical. The same calibration curves can be used for both silicon and germanium, in view of the equality of their permeabilities. Orig. art. has: 7 figures and 2 tables. [02]

SUB CODE: 09, 14/ SUBM DATE: none/ ORIG REF: 001/ OTH REF: 001/

Card 2/2 hs

L 06431-67 EWT(m)/EWP(t)/ETI IJP(c) JD/JG

ACC NR: AP6026708 SOURCE CODE: UR/0181/66/008/008/2472/2473

AUTHOR: Gulyayeva, A. S.; Ivleva, V. S.; Iglitsyn, M. I.

ORG: State Scientific Research and Design Institute of the Rare Metal Industry, Moscow (Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut redkometallicheskoy promyshlennosti)

TITLE: Lifetime of excess charge carriers in InSb single crystals with Ge and Au impurities

SOURCE: Fizika tverdogo tela, v. 8, no. 8, 1966, 2472-2473

TOPIC TAGS: indium compound, antimonide, carrier lifetime, recombination

ABSTRACT: The object of the work was to determine the effect of doping InSb single crystals with Ge and Au impurities on the recombination of excess carriers. p-Type samples were obtained from the original n-type material (electron concentration 10^{14} cm^{-3}) by this doping. The carrier lifetimes τ_n were measured at 77-300°K by stationary methods of measurement of the photomagnetic effect (τ_{pm}) and photoconductivity (τ_{pc}). The lifetime of electrons is inversely proportional to the concentration of traps. At 77°K, in samples doped with Ge, the quantity $\tau_n = \tau_{pm}$ changes by less than an order of magnitude as the Ge concentration increases by a factor of 200. This indicates that the recombination does not take place on Ge atoms. The lifetime data show that the Ge impurity does not affect the recombination of excess carriers. In the 77-170°K

Card 1/2

L 06431-67

ACC NR: AP6037008 (A,N) SOURCE CODE: UR/0181/66/008/011/3414/3416

AUTHOR: Iglitsyn, M. I.; Yurova, Ye. S.

ORG: State Scientific Research and Design Institute of the Rare-Metal Industry, Moscow (Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut redkometallicheskoy promyshlennosti)

TITLE: Lifetime of minority carriers in germanium doped with mercury

SOURCE: Fizika tverdogo tela, v. 8, no. 11, 1966, 3414-3416

TOPIC TAGS: germanium semiconductor, minority carrier, electron recombination, Hall effect, photomagnetic effect, carrier density, activation energy, carrier lifetime

ABSTRACT: The authors investigated the recombination of minority carriers in p-type Ge doped with Hg and Sb to provide different degrees of compensation of the material. The mercury concentration ranged from 5×10^{13} to 1.5×10^{15} cm^{-3}. The Hall effect and the photomagnetic effect were measured in the temperature range from liquid nitrogen to room temperature. In measurements of the photoelectromagnetic effect the injection level was low at all temperatures. The temperature dependence of the carrier density exhibited sections corresponding to the first and second levels of mercury. The activation energies calculated from these curves agree well with the published values (0.089 and 0.23 ev from the edge of the valence band). Measurements of the photoelectromagnetic effect in the same samples yielded the temperature dependences of the lifetimes of the minority carriers. The results show that in samples

Card 1/2

ACC NR: AP6037008

with sufficiently high degree of compensation, the recombination at room temperature is determined by capture by negatively charged mercury ions. The capture cross sections were ~1.5 x 10^{-17} and ~(1 - 4) x 10^{-15} cm^2 at 300 and 100K respectively. At low temperatures the recombination was also determined essentially by the mercury ions. The lifetime increased only slightly with decreasing temperature in the region where the Fermi level was below the first level of Hg, most probably because of the temperature dependence of the cross section for the capture of electrons by neutral Hg. The sharp decrease of the lifetime at temperatures close to that of liquid nitrogen is not connected with the mercury and may be due to either surface recombination or recombination with an uncontrolled impurity. The authors thank A. I. Pyatnitskiy and L. S. Milevskiy for supplying the samples. Orig. art. has: 1 figure.

SUB CODE: 20/ SUBM DATE: 30May66/ ORIG REF: 002/ OTH REF: 001

Card 2/2

ACC NR: AP7005851 SOURCE CODE: UR/0181/66/008/012/3606/3612

AUTHOR: Iglitsyn, M. I.; Pel', E. G.; Pervova, L. Ya.; Fistul', V. I.

ORG: State Scientific Research and Design Institute of the Rare Metal Industry, Moscow (Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut redkometallicheskoy promyshlennosti)

TITLE: Instability of an electron-hole plasma in a semiconductor, due to the nonlinearity of the volt-ampere characteristics

SOURCE: Fizika tverdogo tela, v. 8, no. 12, 1966, 3606-3612

TOPIC TAGS: semiconductor plasma, semiconductor carrier, volt ampere characteristic, plasma instability, carrier density, semiconductor conductivity

ABSTRACT: The conditions for the occurrence of instability in a solid-state plasma are derived theoretically and the conclusions of the theory are checked experimentally with measurements on p-type germanium single crystals doped with gold and antimony. The tests consisted of determining the volt-ampere characteristics and plots of the hole density and hole-capture cross section against the field. The results show that in a crystal in which the electron and hole components of the conductivity are nonlinear (as a result, for example, of the dependence of the recombination cross section on the electric field) oscillations of the conductivity occur. This type of instability has a resonant character. The theoretical calculations yield formulas for the oscillation frequency and for the critical field. The experimentally measured

Card 1/2

ACC NR: AP7005851

period of the oscillations and of the critical field for a germanium crystal doped with gold agreed with the calculated values. The electronic component of the conductivity in such a crystal is shown to have a negative differential resistance. The instability is connected with nonlinearity of the volt-ampere characteristics, and has a resonant character. The authors thank A. Ya. Shul'man, O. V. Konstantinov, V. I. Perel', and D. G. Andrianov for a discussion of the results. Orig. art. has: 3 figures and 15 formulas.

SUB CODE: 20/ SUBM DATE: 13Jun66/ ORIG REF: 002/ OTH REF: 003

Card 2/2

IGLODI, Miklos, tanito (EJ-86-99)

A motorist's thoughts on the eve of the spring season. Auto motor 17 no. 7:5 6 Ap '64.

IGLOY, Margit

Application of pH-chromatography for determining the dissociation constant of dissociating antibiotics. Magy kem lap 18 no.12: 622-624 D '63.

1. Gyugyszeripari Kutato Intezet.

MIZSEI, Antal; IGLOY, Margit; VERESS, Gavor

Determination of small quantity glycerin. Magy kem lap 19 no.9: 503-504 S '64.

1. Research Institute of the Pharmaceutical Industry, Budapest.

IGLOY, Margit

Determination of the isoelectric point of amphoteric electrolytes by means of pH-chromatography. Magy kem lap 20 no.3:166-167 Mr '65.

1. Pharmaceutical Research Institute, Budapest.

IGMANDY, Z.; HARACSI, L.

Occurrence of tan tinder (Xanthochrous obliquus (Pers.) B. et G.) on our deciduous trees. p. 73.
(AZ ERDOMERNOKI FOISKOLA KOZLEMENYEI, No. 1, 1950. Sopron, Hungary)

SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, no. 9, Sep. 1957. Uncl.